

WHAT IS CLAIMED IS:

1. A patient-interactive neurostimulation system,
comprising:

5 a plurality of neurological stimulator devices
implanted in the body of a patient, said neurological
stimulator devices being adapted for receiving a specific
one of a plurality of predetermined programming codes and
responding thereto to provide electrical stimulation to
nervous tissue according to said specific one predetermined
10 programming code;

a patient-interactive computer having processing
means, said processing means defining which one of said
plurality of said specific predetermined programming codes
has to be transmitted to said neurological stimulator
15 devices; and

a transmitter interface unit operatively coupled
to said patient interactive computer and controlled by said
processing means to generate either of said plurality of
said predetermined programming codes, and to transmit said
20 specific one predetermined code towards said neurological
stimulator devices,

said transmitter interface unit comprising:

a control interface unit communicating with said
patient-interactive computer through a communication
25 channel to transmit data defined by said processing means;
a data memory unit adapted to store a plurality

of parameters for said plurality of said specific predetermined programming codes, said data memory unit interfacing with said control interface unit and exchanging data therewith;

5 a direct digital synthesizer interfacing with said control interface unit for receiving data therefrom and outputting a carrier signal in response thereto;

 antenna means actuated for transmitting signals corresponding to said predetermined programming codes to
10 said neurological stimulator devices,

 transistor circuitry operatively coupled to said antenna means for driving said antenna means in an ON/OFF manner, and

 a driving unit interfacing with said direct
15 digital synthesizer for generating gating pulses supplied to said transistor circuitry to drive same in a manner defined by said processing means within said patient-interactive computer.

2. The patient interactive neurostimulation system of Claim 1, wherein said transmitter interface unit is integrally embedded within said patient-interactive computer.

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3. The patient-interactive neurostimulation system of Claim 1, wherein said transmitter interface unit is integrally embedded within said antenna means.

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4. The patient-interactive neurostimulation system of Claim 1, wherein said direct digital synthesizer includes a digital-to-analog converter outputting an analog carrier signal, and wherein said driving unit includes at least one analog comparator having a pair of inputs and coupled by one input thereof to the output of said digital-to-analog converter and receiving an analog reference signal at another input thereof, an output of said at least one analog comparator being coupled to an input of said transistor circuitry.

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5. The patient-interactive neurostimulation system of Claim 1, wherein said driving unit includes at least one digital comparator coupled by one input thereof to the output of said direct digital synthesizer to receive a digital carrier signal generated at said direct digital synthesizer, and receiving a digital reference code at another input thereof, an output of said at least one digital comparator being coupled to an input of said transistor circuitry.

6. The patient-interactive neurostimulation system of Claim 1, wherein said transistor circuitry includes a tuned tank circuit for generating an RF field.

7. The patient-interactive neurostimulation system of Claim 1, wherein said transistor circuitry includes an H-bridge circuit having four transistors each driven independently via a respective input of said H-bridge circuit.

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8. The patient-interactive neurostimulation system of Claim 1, wherein said transistor circuitry includes an H-bridge circuit having two pairs of transistors, each said pair of the transistors being independently driven through a respective input of said H-bridge circuit.

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9. The patient-interactive neurostimulation system of Claim 8, wherein said H-bridge circuit further includes a non-inverting buffer amplifier at a first input and an inverting buffer amplifier at a second input of said H-bridge circuit.

10. The patient-interactive neurostimulation system of Claim 5, wherein said transistor circuitry comprises a modulator unit coupled to said carrier signal for modulating the same under command of said processing means.

11. The patient-interactive neurostimulation system of Claim 10, wherein said modulator unit includes a balanced modulator.

12. The patient-interactive neurostimulation system of Claim 10, wherein said direct digital synthesizer includes a phase accumulator interfacing with said control interface unit and a digital-to-analog converter coupled to said phase accumulator, wherein said transmitter interface unit further includes:

a low pass filter coupled between the output of said digital-to-analog converter and a first input of said modulator unit to couple the carrier signal in analog form to said first input of said modulator unit, and

switching means for intermittently connecting a second input of said modulator unit to either said output of said at least one digital comparator and an output of said control interface unit;

wherein said one input of said at least one digital comparator is coupled to the output of said phase accumulator, and wherein said another input of said at least one digital comparator is coupled to said control interface unit.

13. The patient interactive neurostimulation system of Claim 1, wherein said patient interactive computer includes a display means, screen graphics and a screen worded message to the patient corresponding to said screen graphics displayed substantially simultaneously on said display means of said patient-interactive computer, said screen worded message describing to the patient an action expected from the same to operate an indication means.

14. The patient-interactive neurostimulation system of Claim 12, wherein said screen graphics includes images of a human's body, wherein said screen worded message requests the patient to outline, by means of an indication means, an area of the pain being experienced to be aligned with respective areas of said images of the human's body, and

wherein said screen worded message further includes a request to the patient to outline, by means of said indication means, a topography of paresthesias in response to the electrical stimulation by said specific predetermined programming code transmitted by said transmitter interface unit towards said neurological stimulator devices.

15. The patient-interactive neurostimulation system of Claim 1, wherein said patient interactive computer includes a pen-top computer.

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16. The patient-interactive neurostimulation system of Claim 1, further including a physician's computer telemetrically communicating with said patient-interactive computer, a plurality of optimization protocols being stored in said physician's computer, each of said optimization protocols for defining a predetermined optimization session.

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17. The patient-interactive neurostimulation system of Claim 16, wherein data corresponding to responses entered by the patient into said patient-interactive computer are archived in said physician's computer.

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18. The patient-interactive neurostimulation system of Claim 1, further including printing means in communication with said patient interactive computer.

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19. The patient-interactive neurostimulation system of Claim 1, further including means adapted to provide communication with a remote computer server.